Pelapisan Permukaan dalam Nosel Roket RKX100 dengan Cr2C3-NiCr HVOF: Optimasi Kekuatan lekat melalui Variasi Kekasaran Permukaan

---

Abstrak

Nozzle of RKX l00 rocket contributes 30 % to the total weight of the structure, so that allowing further research on weight reduction. An alternatiye for this is by substitution of massive graphite, which is currently used' as thermal protector in the nozzle, with thin layer of HVOF (High Velocity Oxy-Fuel) thermal spray layer. A series of study on the characteristics of various type of HVOF coating material have been conducted This paper presents the investigation on the HVOF Cr,C3-NiCr thermal spray coating, particularly, the optimization of bonding strength by varying surface roughness of substrates. Characterization includes bonding strength test, microhardness measurement and microstructural analysis by both optical and scanning electron microscopes (SEM). The results showed that grit blasting pressure increases the surface roughness from 4.54 ,urn to 5.72 _um at the pressure of 6 bar. Average microhardness of the coating is 631 VHN_;m.Coating applied to the Surface with roughness of 5.42 ,ann possessed the highest bonding strength of 4 4 MPa. Microstructural observation by using optical microscope and scanning electron microscope (SEM) confirmed dense lamellae structure with variable composition. High coating adherence was found to be due to mechanical interlocking.